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**BUREAU OF MINING REGULATION AND RECLAMATION**

**PREPARATION REQUIREMENTS AND GUIDELINES FOR  
PERMANENT CLOSURE PLANS AND FINAL CLOSURE REPORTS**

This document explains to an operator/permittee the regulatory requirements for closure of a mining operation. The Nevada Department of Conservation and Natural Resources, Division of Environmental Protection (NDEP), Bureau of Mining Regulation and Reclamation (Bureau), Mining Regulation Branch and Mining Closure Branch, issue Water Pollution Control Permits (WPCP) to construct, operate and close mining operations pursuant to the Nevada Water Pollution Control Law, Nevada Revised Statutes (NRS) 445A.300 through 445A.730, inclusive. Chapter 445A.350 through 445A.447 of the Nevada Administrative Code (NAC), titled 'Mining Facilities', contains the applicable mining regulations. **The primary function of both the Mining Regulation Branch and the Mining Closure Branch is to ensure that "Waters of the state", as described in NRS 445A.415, are not degraded during and after a mining operation.**

These regulations apply to all mining operations, with the exceptions of those facilities as provided for within NAC 445A.387, within the State of Nevada, regardless of land ownership. Water Pollution Control Permits, as issued, renewed, or subsequently modified, remain in effect throughout the life of the mine until final closure is achieved and approved by the Bureau. Closure-related activities (e.g., monitoring) are coordinated by the Mining Closure Branch. Branch staff will evaluate chemical data to confirm stabilization of all applicable mine components (or sources) that must be considered for closure.

Appendix A of this guidance document is a list of applicable NRS 445A statutes and NAC 445A regulations which apply to closure.

There are four major documents, listed in sequential order, regarding mine site closure that are necessary for submittal to this Bureau for review and approval. The first two documents are regulatory requirements while the third and fourth are Bureau requirements.

1. **TENTATIVE PERMANENT CLOSURE PLAN** - submitted at the time of application for a Water Pollution Control Permit (NAC 445A.398);
2. **FINAL PERMANENT CLOSURE PLAN** - submitted at least two (2) years **prior** to the "anticipated permanent closure of that process component" (NAC 445A.447);
3. **FINAL CLOSURE REPORT** - (a) summarizes all completed closure-related activities, for example; detoxification of the heap; monitoring; component characterization; leachfield construction; completed earthwork; (b) provides closure related as-builts, if required; and (c) proposes post-closure monitoring, as applicable.
4. **REQUEST FOR FINAL CLOSURE** - demonstrates component stabilization (both chemical and physical) have been achieved and solicits Water Pollution Control Permit retirement.

The closure and stabilization requirements pertain to process and non-process components (solid and liquid process mine wastes) such as heap leach pads, tailings impoundments, pits, waste rock dumps, ore stockpiles, and any other associated mine components that, if not properly managed during operation and closure, could potentially lead to the degradation of waters of the State. A mining facility operator/permittee is required to submit a Tentative Permanent Closure Plan in accordance with NAC 445A.398 at the time of application for a Water Pollution Control Permit.

A Final Permanent Closure Plan must be submitted to the Bureau two (2) years prior to the anticipated closure of a mine site in accordance with NAC 445A.447. This plan must provide closure goals and a detailed methodology of activities necessary to achieve a level of stabilization of all known and potential contaminants at the site as defined by NAC 445A.379. The Final Permanent Closure Plan must include a detailed description of all proposed monitoring that will be conducted to demonstrate how the closure goals are being met. The operator/permittee should receive Bureau approval for the closure plans before initiating action. The Bureau recognizes that reclamation activities such as reshaping and regrading, covering, placing of growth medium, applying soil amendments, and revegetation are in many cases major elements of the site stabilization and closure process. These reclamation activities should therefore become part of the closure plan and should be described or referenced as part of the Final Permanent Closure Plan. It is in the operator/permittee's interest, as general closure scenarios become more detailed, that the reclamation plan, together with the bond cost calculations, be reviewed and amended as necessary. Failure to coordinate closure and reclamation activities and documentation may result in additional operator encumbered expenditures.

To assist in the operator's preparation and the Branch's review of both the Tentative and Final Permanent Closure Plans, a guideline for these documents is provided beginning on page 6 of this document.

The Bureau recognizes that closure of a mine site is a dynamic process subject to rapidly changing technology and methods. Changes and updates to the Tentative and Final Permanent Closure Plans are encouraged as mining progresses. Closure documents should be thoroughly reviewed as part of the application for reissuance of the Water Pollution Control Permit. In addition, and as required by the Water Pollution Control Permit within the annual reporting section, an updated evaluation of the closure plan using specific characterization data for each process component with respect to achieving stabilization should be discussed. Should a previously submitted closure document need revision, the operator should then clearly amend their existing document. This amendment should be reviewed by the Bureau prior to the initiation of the proposed modified closure-related activity(s). It is in the operators interest to keep this Bureau informed of all closure activities. Failure to do so may result in costly Bureau stipulated modifications.

Following the completion of all closure related activities, a Final Closure Report must be submitted to the Bureau summarizing all completed closure related activities. This document should contain all information necessary for the operator to demonstrate to this Bureau that the completed closure activities, per process and non-process component, will ensure that waters of the State will not be degraded. This report must include a proposal for post-closure monitoring for an initial period of time not less than five (5) years in order to provide additional supporting data that stabilization has truly been achieved. Bureau approval for final closure cannot be considered without a satisfactory Final Closure Report. At this point, upon approval of the Final Closure Report, the mine site is considered to be in the 'post-closure' period and a revised **Water Pollution Control Permit - Post Closure** is issued. The Bureau defines the 'post-closure' period as that time when the operator has completed all required closure activities and is now in the post-closure monitoring period. The length of time the operator will be required to monitor components is a function of both the complexity of the site and the success of the closure activities as documented by the post-closure monitoring. Factors that enter into this time frame include depth to, and quality of, ground water; location and quality of surface waters; history of a particular component; etc. It is at the beginning of the post-closure monitoring period that this Bureau's permit fees are reduced to those as provided under NAC 445A.232 - 'fees for Water Pollution Control Permits'.

The Request for Final Closure is made following the completion of the post-closure monitoring period. The post-closure monitoring period must validate the operators' contention that those closure activities completed have indeed stabilized, as defined by NAC 445A.379, a particular component. The request should contain all post-closure monitoring information and clearly demonstrate stabilization. Final closure is complete when the requirements contained in NAC 445A.429, 445A.430 and 445A.431 have been achieved. Upon the successful demonstration of stabilization, the Bureau would now consider the mine site to be closed, would retire the Water Pollution Control Permit, and eliminate all NAC445A fee requirements. The Bureau will only retire the WPCP and fees when all components are stabilized. The post-closure period may

include reclamation activities such as seeding, ripping, and fertilizing; or future activities such as plugging monitoring wells, removing fencing or access road removal. The Bureau encourages concurrent closure and reclamation activities. Concurrent closure activities may include, but are not limited to, solution treatment, regrading, material blending, monitoring, and other activities undertaken for permanent closure and performed under an approved Permanent Closure Plan. It is possible for an operator to take an individual component into closure, through the post-closure monitoring period, and to demonstrate stabilization while other components of the mine remain active.

Review or approval of facility plans, design drawings, and specifications or other documents by or for the Bureau is for administrative purposes only and does not relieve the owner of the responsibility to properly plan, design, build and effectively operate and maintain the facility as required under law, regulations, permits, and good management practices. The Bureau is not responsible for increased costs resulting from defects in the design, plans and specifications of other pertinent documents.

The permittee is responsible for obtaining all required site permits which may include, but not be limited to:

404 Permits-	Army Corps of Engineers/NDEP
Stormwater Permits-	NDEP
Air Permits-	NDEP
Reclamation Permit-	NDEP
Dam Permits-	Division of Water Resources
Health Permits-	Local Health Department
Local Permits-	Local Government Agencies
Federal Land Management-	U.S.Bureau of Land Management/ U.S.Forest Service

### **GUIDELINES FOR THE PREPARATION OF PERMANENT CLOSURE PLANS**

(As a note, the Bureau has additional guidance documents available that provide more detail on specific topics. Several of these documents are mentioned in context below. All Bureau guidance documents may be obtained either directly from the Bureau or may be downloaded from the Bureau's website located within <http://www.state.nv.us/ndep/>)

**TENTATIVE PERMANENT CLOSURE PLAN (TPCP)** - per NAC 445A.398 - submitted at the time of application for a Water Pollution Control Permit (WPCP). Goals and strategies for developing a Final Permanent Closure Plan should be included in this document.

**FINAL PERMANENT CLOSURE PLAN (FPCP)** - submitted at least 2 years before the anticipated permanent closure of that process component. An updated evaluation of the closure plan using specific characterization data for each process component with respect to achieving stabilization is to be submitted as part of the WPCP annual report. The operator is free to format this document, as well as the Tentative Permanent Closure Plan, as they wish, however, as appropriate, both documents should discuss the following items:

## **I. INTRODUCTION.**

- A. General Statement of Purpose: This permanent closure plan must be submitted to the Division of Environmental Protection, Bureau of Mining Regulation and Reclamation with the intent to fulfill the requirements as defined in NAC 445A. It must detail the procedures proposed for achieving stabilization of all mine source components. Details and direction of any proposed modeling, fate and transport analysis, or other projections of final closure configurations should be clearly described in the permanent closure plan. The Bureau will review all proposed analyses as they relate to the quantity and quality of long term drainage and percolation which may have the potential to degrade waters of the state. The operator/permittee must clearly demonstrate through the use of credible source, pathway and fate evaluations, modeling, or other projections that the proposed source does not have the potential to degrade waters of the state.

## **II. SITE LOCATION AND BACKGROUND INFORMATION**

The following information should be included in the Permanent Closure Plans:

- A. Geographic location, site climatology, and overall site geology;
- B. Water Pollution Control Permit status; pre-mining land use; historic mining activity (under previous ownership); recent mining activity (under current ownership - exploration, construction, mining, leaching, etc.);
- C. Background ground water depth and quality. The operator must clearly establish both of these parameters, per component of concern. The establishment of these two parameters is critical for a successful closure program. The operator should refer to NAC 445A.424 to review potential closure options. Include a physical description of the aquifer(s) and nearest downgradient users of the aquifer(s).

- D. Background surface water location and quality (if applicable). As with ground water above, background water quality must be established. The operator should refer to NRS 445A.565 regarding treatment of and control over if a discharge to surface waters is a possibility. Discuss and indicate location of any springs (whether seasonal or perennial) onsite. Indicate any components located on springs.

### **III. FACILITY DESCRIPTION**

- A. Provide a status of all mine components, both active and inactive, e.g., process solution circuit to include heaps, ore stockpiles, mills, ponds, tailings impoundments; and non-process components such as waste rock disposal areas, open pits, overflow/event ponds, vehicle maintenance shops, landfills, etc.
- B. Provide applicable figures and flow charts of all process fluid system components. Include dimensions and capacities of all process components. Provide the location of any hydrocarbon remediation pads or areas and any landfills.
- C. As applicable, describe the engineering specifications for all liners, to include sub-base, and leak detection systems for heaps, ponds, tailings impoundments, and all associated conveyance devices that require containment. Provide a schematic that shows the locations of all leak detection systems and sampling ports.
- D. Describe all past, existing, and anticipated solid and liquid mine wastes and/or sources that will require formal closure.
- E. Provide all monitoring, production, condemnation, and exploratory well logs. Provide mapping with all the above wells clearly delineated. The operator will be required to clearly demonstrate that all wells and drill holes have been adequately sealed.

### **IV. SOURCE CHARACTERIZATION PROGRAM** - As defined by NAC 445A.378, a “Source” means any building, structure, facility or installation from which there is or may be the discharge of pollutants. A Source Characterization Program is a detailed sampling and analytical approach to 1) identify what materials, both solid and liquid, are present, per mining component; and 2) to identify what materials may require special attention, per mining component, in the closure and post-closure phase.

A Nevada state certified Clean Water Act laboratory (in- or out-of-state) must be selected for all sample analyses. A listing of those laboratories can be supplied by the Bureau or

may be accessed in NDEP's website at <http://www.state.nv.us/ndep/> - within the Bureau of Water Quality Planning homepage.

As appropriate, the Bureau will accept various types of laboratory analytical methods such as the Toxicity Characteristic Leaching Procedure (TCLP), Synthetic Precipitation Leaching Procedure (SPLP), Meteoric Water Mobility Procedure (MWMP), soil attenuation studies, and column testing. The operator should discuss with the Bureau the proposed goals and protocols prior to initiating a sampling and testing program. The Bureau does not require the TCLP nor SPLP methods on any material. In general, the MWMP and Acid/Base Accounting are the primary testing methods the Bureau requires on source materials and wastes.

**A. GENERAL REQUIREMENTS** - the following general requirements are requisite for any source that has the potential to degrade waters of the state.

1. Describe all past and present sampling programs, per source. Discuss field sampling protocols such as field filtering; sample preservation; sample holding times; approved analytical method(s); and respective method detection limits (MDL). Provide the rationale for your sampling program per source, ie, how the number of samples to adequately characterize the material was arrived at.
2. Provide sample analysis results from all previous and ongoing sampling programs.
3. Provide an accurate and appropriately scaled map showing all past and present sample locations.
4. Acid/Base Accounting is required for each individual lithology in waste rock disposal areas, leach pads, tailings materials, and open pits. The operator will be required to provide all test results and a discussion, per component, predicting whether or not a source is or will be a future acid rock drainage (ARD) concern.
5. Describe the following physical characteristics (as applicable to source):
  - specific gravity of solids
  - slurry density (solids: liquids ratio)
  - deposition rate and method of deposition
  - average operational dry density
  - final operational height
  - final operational area
  - final operational top surface topography
  - final operational water balance
  - final operational embankment geometry
  - strength characteristics of embankment and related components

- potentiometric characteristics of embankment and related components
  - anticipated range of stability characteristics under expected and of operational conditions (static and pseudo-static)
  - anticipated process water inventory at end of operations
  - anticipated surface water hydrology at end of operations and for predicted post-operational conditions (upstream diversion, required storm volume storage and flow rate, run-off and infiltration characteristics)
6. Describe the following chemical characteristics of solids and anticipated residual drainage:
- mineralogy
  - geochemistry
  - metals leaching potential
  - potential final run-off chemistry
  - potential final seepage chemistry
  - potential final drainage discharge chemistry



**B. INDIVIDUAL SOURCE DISCUSSION** - the following requirements are source specific.

**1. WASTE ROCK DISPOSAL AREA(S)**

- a. The Bureau document ‘**WASTE ROCK AND OVERBURDEN EVALUATION**’ provides characterization guidance.
- b. Provide or reference Bureau approved waste rock management plans, if applicable.

**2. OPEN PIT(S)**

- a. Provide or reference Bureau approved document(s) used in the discussion of water quality issues as presented in NAC 445A.429.

**3. HEAP LEACH PAD(S)**

- a. Heap leach pads must be stabilized per NAC 445A.430. Detail all previous detoxification, characterization, and other closure-related activities for spent heap leach ore (e.g., rinse times and frequencies, pore volumes, sampling, etc.).
- b. Discuss amounts and kinds of materials that make up the heap, per pad as applicable (e.g., homogenous vs heterogenous ore types). Was the ore crushed or run-of-mine? Provide a discussion on those heap draindown chemical constituents that are or are anticipated to be of concern. Discuss the placement of the ore (i.e., number of lifts, radial stacked, end dumped). If the heap was agglomerated, provide details.

**4. TAILINGS IMPOUNDMENT**

- a. Tailings must be stabilized per NAC 445A.431. Discuss the amounts, and the physical and chemical characteristics of the tailings material.

**5. PROCESS PONDS**

- a. Provide pond sludge quantity and characterization results, per pond.

6. **PROCESS FACILITIES**

- a. Discuss and characterize any liquid and solid wastes not discussed above proposed to be left onsite following mine closure. This would include residual material in tanks, thickeners, and CIL circuit for example.

7. **ANCILLARY FACILITIES**

- a. Identify all ancillary sources that will need either chemical characterization or an explanation provided for relative to stabilization.
- b. Provide characterization information on any hydrocarbon remediation pads or areas and any landfills proposed to remain onsite.
- c. Indicate those areas, for example roads, where waste rock was used.

V. **SOURCE STABILIZATION PROGRAM** - A Source Stabilization Program will be those measures, per source, designed to preclude the migration of any contaminant having the potential to degrade the waters of the state.

A. **General Requirements** - the following general requirements are requisite for any source that has the potential to degrade waters of the state.

- 1. Modeling - The Bureau will accept computer modeling as a tool in predicting future behavior of a source. The operator should, when submitting modeling results to this Bureau, provide a discussion of all knowns and assumptions used. In addition, uncertainty analysis; stress runs (high and low extremes); statistical analysis and outputs should be presented.
- 2. Long Term Physical Stability - As required by NAC 445A.433 - '*Minimum design criteria; - 1(c) All process components must be designed to withstand the run-off from a 24-hour storm event with a 100-year recurrence interval*'. The Bureau interprets this requirement as adequate for an operating mine with personnel available for immediate maintenance. However, in the post-closure operating mode, personnel are generally not available for immediate maintenance/repair. Under this condition, the above design criteria requirement may be inadequate. Therefore, the Bureau will require the operator to clearly demonstrate that all source/components in closure are designed to be stable for the long term.
- 3. It has been this Bureau's experience that the best method to ensure that a component does not develop a long term water quality problem is to preclude

meteoric water from infiltrating through the component. As such, the Bureau will require a thorough discussion of various alternatives in preventing, or at least minimizing, meteoric water infiltration such as an engineered cap, a topsoil cover, diversion ditches, regrading and reshaping, compacting, etc.

4. Should the evaluation of a source indicate that at some point a discharge (either surface or subsurface) may be possible, the operator shall provide:
  - evaluation of anticipated seepage discharge rate and chemistry
  - evaluation of anticipated drain discharge rate and chemistry
  - evaluation of potential storm water discharge and chemistry
  - physical properties of pathway
  - potential attenuation and diffusion in pathways
5. Should it be determined that there is the potential to degrade waters of the state, the operator shall discuss:
  - the need for additional controls to reduce/treat anticipated source releases, including seepage, drainage and surface run-off
  - the necessity to further characterize potential pathways for source releases
  - the necessity for additional storm water run-on and run-off controls
  - data gaps limiting characterization
  - proposed methods and schedules for additional data acquisition and evaluation required to refine predictions (e.g., source-pathway-receiving water analysis, bench/field scale treatment tests, attenuation tests, etc.)
  - proposed operational modifications, additional construction, and schedules needed to reduce potential for post-operation releases.
  - proposed additional monitoring to validate the benefits of modifications supporting the demonstration of non-degradation to receiving waters
  - potential alternatives for reducing and/or treating post-closure source releases (i.e., cover application, anaerobic sulfate reduction)
  - anticipated closure period (i.e., time required for near equilibrium condition to be attained, whereafter any source releases have no potential to degrade waters of the state)
6. Reuse or disposal of mine waste solids outside of containment is not allowed without approval from the Bureau and may be considered either a minor or major modification to a water pollution control permit. To apply for approval, submit a proposal to the Bureau in accordance with the guidance document **'ALTERNATE USE OF MINE WASTE SOLIDS - DISPOSAL OUTSIDE OF CONTAINMENT'**.

7. Provide a complete and detailed post-closure monitoring plan. The proposed plan shall include sampling protocols such as field filtering; number of samples; sample preservation; sample holding times; and the approved method of analysis together with the method detection limits (MDL). Include anticipated frequency and duration of closure and post-closure monitoring.

**B. Individual Source Discussion** - the following requirements are source specific.

1. **WASTE ROCK DISPOSAL AREA(S)** - in general, as part of the active mine operating plan, waste rock is characterized, evaluated, and disposed of in regulatory agency(s) approved manner. The operator should only have to reference existing documents, such as waste rock management, to present any required characterization and stabilization information. The operator will be required to monitor the waste rock disposal areas(s) in post-closure.
2. **OPEN PIT(S)** - as with waste rock disposal area(s) above, the operator, as part of the active mine operating plan, should have clearly demonstrated to all concerned agencies that the pit(s) do not have the potential to degrade waters of the state per NAC 445A.429. The operator will be required to monitor open pit(s), whether or not they penetrated the ground water table, in post-closure.
3. **HEAP LEACH PAD(S)** - there are alternative methods to closing heap leach pads. A complete discussion of all scenarios is beyond the scope of this document. Presented below are basic requirements.
  - a. Heap leach facilities must meet the requirements as set forth in **NAC 445A.430 Stabilization of spent ore.**
  - b. Describe or propose heap detoxification activities for WAD cyanide if applicable. Provide required pore volume, application rates and duration, and planned sampling of the heap.
  - c. Provide a drain down curve (residual draindown flow over time). Provide all knowns and assumptions used in predicting what the long-term residual volume of draindown will be.
  - d. Discuss the actual and anticipated residual heap draindown quality. Will the heap effluent require long-term treatment ? Propose heap effluent treatment, if necessary, and provide specific details of such items as dosing tanks, sampling ports, active/passive

treatment systems, and the disposal system for treated effluent (in most cases a septic type leachfield). The Bureau document titled **‘MONITORING AND ANALYSIS OF POST-CLOSURE HEAP DISCHARGE’** provides details and guidelines for managing heap drawdown in the post-closure period.

- e. Describe the procedures for initiating final closure activities on the heap surface (e.g., resloping, capping or covering, solar reshaping, construction of diversion ditches), etc.

#### 4. **TAILINGS IMPOUNDMENT**

- a. Tailings facilities must meet the requirements as set forth in **NAC 445A.431 Stabilization of tailings.**
- b. The operator must consult with the State of Nevada’s Division of Water Resources, Bureau of Engineering and Dam Safety, regarding tailings dams in the post-closure period.
- c. Describe the procedures for initiating final closure activities on the tailings surface (e.g., resloping, capping or covering, construction of diversion ditches), etc.

#### 5. **PROCESS PONDS**

- a. Based on analytical characterization data, describe the proposed fate of the pond solids (e.g., disposed of or left in place); if proposed to be left in place, describe method of stabilization or encapsulation;
- b. Describe whether liner material will be disposed of or left in place; and
- c. Describe the ultimate fate of the process component (i.e., if the pond basin will be backfilled, describe the procedures and what backfill material is proposed for use), etc.

#### 6. **PROCESS FACILITIES**

- a. Discuss the ultimate fate of all process facilities (ie, sold, dismantled, stabilized onsite, etc);

- b. Discuss any proposed decontamination of refineries, assay labs or associated areas.

7. **ANCILLARY FACILITIES**

- a. Discuss the ultimate fate of all ancillary facilities (ie, buildings removed, foundations buried onsite, area ripped, stabilized onsite, etc).

## APPENDIX A

### THE FOLLOWING NRS'S AND NAC'S RELATE TO CLOSURE ACTIVITIES:

(note: The following list may be incomplete depending on site specific conditions. Please refer to NAC 445A for complete State mining regulations. *NRS's are italicized*)

***NRS 445A.415 "Waters of the state" defined.*** *"Waters of the state" means all waters situated wholly or partly within or bordering upon this state, including but not limited to:*

- 1. All streams, lakes, ponds, impounding reservoirs, marshes, water courses, waterways, wells, springs, irrigation systems and drainage systems; and*
- 2. All bodies or accumulations of water, surface and underground, natural or artificial.*

*(Added to NRS by 1973, 1709)-(Substituted in revision for NRS 445.191)*

**NAC 445A.357 "Degrade" defined.** "Degrade" means to alter the physical or chemical properties of or to cause a change in the concentration of any substance in the waters of the state in violation of the standards established pursuant to NAC 445A.424.

(Added to NAC by Environmental Comm'n, eff. 9-1-89)(Substituted in revision for NAC 445.24214

**NAC 445A.359 "Facility" defined.** "Facility" means all portions of a mining operation, including, but not limited to, the mine, waste rock piles, or piles, beneficiation process components, processed ore disposal sites, and all associated buildings and structures. The term does not include any process component or nonprocess component which is not used for mining or mineral production, and has not been used in the past for mining or mineral production as part of an operation which is active as of September 1, 1989.

(Added to NAC by Environmental Comm'n, eff. 9-1-89)--(Substituted in revision for NAC 445.24218)

**NAC 445A.361 "Ground water" defined.** "Ground water" means all subsurface water comprising the zone of saturation, including perched zones of saturation, which could produce usable water.

(Added to NAC by Environmental Comm'n, eff. 9-1-89)--(Substituted in revision for NAC 445.24222)

**NAC 445A.363 "Meteoric waters" defined.** "Meteoric waters" means any form of precipitation falling from the earth's atmosphere.

(Added to NAC by Environmental Comm'n, eff. 9-1-89)--(Substituted in revision for NAC 445.24226)

**NAC 445A.367 "Permanent closure" defined.** "Permanent closure" means that time in the operating life of a facility when activities for the final stabilization, removal or mitigation of sources are initiated.

(Added to NAC by Environmental Comm'n, eff. 9-1-89)--(Substituted in revision for NAC 445.24234)

**NAC 445A.375 "Process component" defined.** "Process component" means a distinct portion of a constructed facility which is a point source.

(Added to NAC by Environmental Comm'n, eff. 9-1-89)--(Substituted in revision for NAC 445.2425)

**NAC 445A.376 "Process fluid" defined.** "Process fluid" means any liquids, including meteoric waters, which are intentionally or unintentionally introduced into any portion of the beneficiation process components.

(Added to NAC by Environmental Comm'n, eff. 9-1-89)--(Substituted in revision for NAC 445.24252)

**NAC 445A.378 "Source" defined.** "Source" means any building, structure, facility or installation from which there is or may be the discharge of pollutants.

(Added to NAC by Environmental Comm'n, eff. 9-1-89)--(Substituted in revision for NAC 445.24256)

**NAC 445A.379 "Stabilized" defined.** "Stabilized" means the condition which results when contaminants in a material are bound or contained so as to prevent them from degrading the waters of the state under the environmental conditions that may reasonably be expected to exist at a site.

(Added to NAC by Environmental Comm'n, eff. 9-1-89)--(Substituted in revision for NAC 445.24258)

**NAC 445A.382 "Temporary closure" defined.** "Temporary closure" means the cessation of the operation of a process component for more than 30 days as a result of a planned or unplanned activity.

(Added to NAC by Environmental Comm'n, eff. 9-1-89)--(Substituted in revision for NAC 445.24264)



**NAC 445A.383 "WAD cyanide" defined.** "WAD cyanide" means the cyanide concentration as determined by Method C, Weak Acid Dissociable Cyanide, D2036-082, Part 31 of American Society of Testing Materials Book of Standards. (Added to NAC by Environmental Comm'n, eff. 9-1-89)--(Substituted in revision for 445.24266)

**NAC 445A.398 Contents of application: Proposed operating plans.** The proposed operating plans for a facility must include:

...

6. A tentative plan for the permanent closure of the facility which describes the procedures, methods and schedule for stabilizing spent process materials. The plan must include:

- (a) Procedures for characterizing spent process materials as they are generated; and
- (b) The procedures to stabilize all process components with an emphasis on stabilizing spent process materials and the estimated cost for the procedures.

(Added to NAC by Environmental Comm'n, eff. 9-1-89)--(Substituted in revision for NAC 445.24296)

**NAC 445A.424 Limitations on degradation of water; exemptions.**

1. A facility, regardless of size or type, may not degrade the waters of the state to the extent that:

(a) The quality of surface water is lowered below that allowed by NRS 445.253. (Now NRS 445A.565 - see below)

(b) For ground water:

(1) The quality is lowered below a state or federal regulation prescribing standards for drinking water; or

(2) The concentration of WAD cyanide exceeds 0.2 mg/l. The department may establish a numerical limit for any constituent not regulated by subparagraphs (1) and (2) which may reasonably be expected to be discharged by the facility in sufficient volume and concentration to cause an adverse impact on human health.

(c) The quality of those waters of the state which already exceed the criteria established by subsection 2 is lowered to a level that the department finds would render those waters unsuitable for the existing or potential municipal, industrial, domestic or agricultural use.

2. The department may exempt a body of ground water or portion thereof from the standards established in subsection 1 if the request for an exemption to the ground water standards and the supporting information is submitted as part of the application for the permit. The following criteria will be considered by the department in determining whether to exempt a potentially impacted body of ground water from the standards in subsection 1:

(a) The impacted ground water does not currently serve as a source of drinking water and because of the following reasons the ground water will not serve as a source of

drinking water:

(1) The ground water produces a mineral, hydrocarbon or geothermal fluid which the applicant can demonstrate to the satisfaction of the department exists at a concentration that is expected to be capable of commercial production and that releases by the facility will not affect this production;

(2) The ground water is situated at a depth or location which makes recovery of water for drinking economically or technologically impractical; or

(3) It would be economically or technologically impractical to render the water fit for human consumption; or

(b) The total dissolved solids in the ground water is more than 10,000 milligrams per liter and the ground water is not reasonably expected to become a supply of drinking water.

(Added to NAC by Environmental Comm'n, eff. 9-1-89)--(Substituted in revision for NAC 445.24342)

***NRS 445A.565 Protection of surface waters of higher quality; treatment of and control over discharges constituting new or increased sources of pollution.***

*1. Any surface waters of the state whose quality is higher than the applicable standards of water quality as of the date when those standards become effective must be maintained in their higher quality. No discharges of waste may be made which will result in lowering the quality of these waters unless it has been demonstrated to the commission that the lower quality is justifiable because of economic or social considerations. This subsection does not apply to normal agricultural rotation, improvement or farming practices.*

*2. Any person who plans to discharge waste from any public or private project or development which would constitute a new or increased source of pollution to waters of the state whose quality is high shall, as part of the initial design of the project or development, provide:*

*(a) If the discharge will be from a point source, the highest and best degree of waste treatment available under the existing technology, consistent with the best practice in the particular field under the conditions applicable, and reasonably consistent with the economic capability of the project or development.*

*(b) If the discharge will be from a diffuse source, such measures, methods of operation or practices as are reasonably calculated or designed to prevent, eliminate or reduce water pollution from the source, under the circumstances pertaining to the particular place, in order to achieve control over water pollution which is reasonably consistent with the economic capability of the project or development.*

*3. This section does not limit a municipal sewage treatment plant in disposing of its solid sludge on land if the sludge is properly spread and incorporated into the soil.  
(Added to NRS by 1979, 1029)—(Substituted in revision for NRS 445.253)*

**NAC 445A.429 Procedures required to prevent release of contaminants; requirements concerning impoundments.**

1. The holder of the permit must institute appropriate procedures to ensure that all mined areas do not release contaminants that have the potential to degrade the waters of the state.

2. Open pit mines must, to the extent practicable, be free-draining or left in a manner which minimizes the impoundment of surface drainage and the potential for contaminants to be transported and degrade the waters of the state.

3. Bodies of water which are a result of mine pits penetrating the water table must not create an impoundment which:

(a) Has the potential to degrade the ground waters of the state; or

(b) Has the potential to affect adversely the health of human, terrestrial or avian life.

4. The holder of a permit may apply to the commission to establish a beneficial use with a level of protection less than that required by paragraph (b) of subsection 3 for water impounded in a specific mine pit.

(Added to NAC by Environmental Comm'n, eff. 9-1-89)--(Substituted in revision for NAC 445.24352)

**NAC 445A.430 Stabilization of spent ore.**

1. Spent ore which has been left on pads or which will be removed from a pad must first be rinsed until:

(a) WAD cyanide levels in the effluent rinse water are less than 0.2 mg/l;

(b) The pH level of the effluent rinse water is between 6.0 and 9.0; and

(c) Contaminants in any effluent from the processed ore which would result from meteoric waters would not degrade waters of the state.

2. If the requirements established in subsection 1 cannot be achieved, the department will grant a variance to those conditions if the holder of the permit can demonstrate that:

(a) The remaining solid material, when representatively sampled, does not contain levels of contaminants that are likely to become mobile and degrade the waters of the state under the conditions that will exist at the site; or

(b) The spent ore is stabilized in such a fashion as to inhibit meteoric waters from migrating through the material and transporting contaminants that have the potential to degrade the waters of the state.

3. The department may approve an alternate method for stabilizing ore that has been leached if the holder of the permit can clearly demonstrate that the condition in which

the materials will be left will not create a potential for the waters of the state to be degraded.

(Added to NAC by Environmental Comm'n, eff. 9-1-89)--(Substituted in revision for NAC 445.24354)

**NAC 445A.431 Stabilization of tailings.** Upon termination of the active use of a tailings impoundment, representative samples of the material deposited in the impoundment must be collected and characterized. The tailings must be stabilized during the final closure of a facility so as to inhibit the migration of any contaminant that has the potential to degrade the waters of the state.

(Added to NAC by Environmental Comm'n, eff. 9-1-89)--(Substituted in revision for NAC 445.24356)

**NAC 445A.446 Permanent closure of facility.**

1. The permanent closure of a facility must be initiated:
  - (a) Following the request of the holder of the permit;
  - (b) For a facility which is under a temporary closure, no later than at the end of one renewal of a 5-year permit which has been issued pursuant to subsection 2 of NAC 445A.420; or
  - (c) When the end of the design life of that process component is reached.
2. Permanent closure is complete when the requirements contained in NAC 445A.429, 445A.430 and 445A.431 have been achieved.
3. The time required for monitoring the facility following permanent closure depends upon the particular site and process characteristics, but in no event may the time required exceed 30 years.

(Added to NAC by Environmental Comm'n, eff. 9-1-89)--(Substituted in revision for NAC 445.24386)

**NAC 445A.447 Plans for permanent closure; sources not classified as process components.**

1. Plans for permanent closure are required for all sources at a facility.
2. A final plan for permanent closure of any source which has been identified as a process component must be submitted to the department at least 2 years before the anticipated permanent closure of that process component.
3. Sources which have not been classified as process components must be evaluated at the end of their operating life to determine the potential for pollutants from these sources to migrate and degrade the waters of the state under the final proposed site conditions and must be closed in accordance with the state handbook of best management practices prepared pursuant to NAC 445A.336.

(Added to NAC by Environmental Comm'n, eff. 9-1-89)--Substituted in revision for NAC 445.24388)